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AUTHOR van Tulder, Margriet; Veenman, Simon
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ABSTRACT

This study examines two types of inservice activities in the Netherlands. With the first, school-focused inservice education, continuing education activities are focused on the interests, needs, and problems directly related to one's role and responsibilities in a specific school setting. This focuses on teachers' concerns and needs as well as on matters which demand the coordinated efforts of other teachers in a school setting. The second type, which is individually based, addresses individual teachers' concerns and needs. It can consist of experiences to improve general competence or it can facilitate personal development and/or enrichment. The study poses these three questions: (1) What characteristics must inservice activities, focused on the implementation of educational innovations, have in the opinion of experts in the field of inservice education? (2) To what extent do designers of the inservice education activities, conducted in 1984-87, take these characteristics into account? and (3) What are the relationships between these characteristics of inservice activities and their effects on the implementation of newly acquired knowledge, skills, and insights by teachers? The issues discussed and analyzed were based on the results of a modified Delphi technique, semi-structured interviews and questionnaires, and six in-depth case studies of participating schools. (JD)

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CHARACTERISTICS OF INSERVICE ACTIVITIES AND THEIR EFFECTS ON EDUCATIONAL CHANGE

Margriet van Tulder and Simon Veenman
University of Nijmegen
The Netherlands

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CHARACTERISTICS OF INSERVICE ACTIVITIES AND THEIR EFFECTS ON EDUCATIONAL CHANGE.

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INTRODUCTION

Inservice education and training of teachers in the Netherlands -organized on a voluntary basis- is conveniently defined as a coherent set of activities intended to deepen and broaden knowledge, attitudes and skills which are directly connected with the profession of teaching in order to improve teachers' professionality and the effectiveness of their schools. Inservice education and training serves three main purposes: 1) to stimulate the professional competence and development of teachers; 2) to improve school practice, and 3) to implement political agreed upon innovations in schools.
In spite of the acknowledged importance of inservice education and training for enhancing the quality of teaching and for implementing educational innovations, little is known about effective practices, designs and delivery systems in inservice education. Until now, most attention has been given to conceptual difficulties and procedural/political governance and control issues. Teacher education institutes are responsible for initial or preservice education, but also for inservice education and training. At the same time, supportive educational establishments help schools in solving their problems if need be. The school advisory services which are institutions working at local and regional level, concern themselves with guidance, support and development activities, advising, providing information and evaluations for primary schools, and a number of types of special schools. The given guidance, support or advice is mostly job-embedded or job-related, and directed at the school as a whole or at groups of teachers at school. With the recent emphasis on school-focused or school-centred inservice education and training (INSET) the boundaries between the agencies for organizing inservice activities have become somewhat obscure. Coordination between the colleges of education for primary teachers (PABO) and the school advisory services (SAD) is emphasized, but not easily realized because of the differences in legislation, financing, denomination, responsibilities and competition because of vested interests. This means that there are problems on the part of all the institutions involved in INSET in subordinating self-interests to attainment of genuinely effective inservice education.
Broadly speaking two types of inservice activities can be distinguished. With the first type, school-focused inservice education, continuing education activities are focused on the interests, needs and problems directly related to one's role and responsibilities in a specific school setting. This form of inservice focuses on teachers' concerns and needs as well as on matters which demand the coordinated efforts of several, if not all, teachers in a specific school setting (Howey, 1980). The second type of inservice, which is individually based, addresses individual teachers' concerns and needs. It can consist of experiences to improve general competence or it can facilitate personal development and/or enrichment. In individually based inservice, individual teachers from several schools are grouped together. Nowadays, more emphasis is placed on school-focused inservice. If the individual teacher attempts to put newly acquired ideas or skills into practice, if problems are encountered there is no convenient source of help or sharing. 'It is very hard to be a lone innovator' (Fullan, 1982). Of course, both types of INSET -school-

focused versus individually-based- could be combined with each other.

Given this background the study poses the following questions:

1) What characteristics must inservice activities -focused on the implementation of educational innovations- have in the opinion of experts in the field of inservice education?
2) To what extent do designers of the inservice education activities, conducted in the years 1984-1987, take these characteristics into account?
3) What are the relationships between these characteristics of inservice activities and their effects on the implementation of newly acquired knowledge, insights and skills by teachers?

The results reported here are based on three kinds of data: a) the results of a modified Delphi technique to identify from a group of inservice experts salient features of effective inservice practices, their programming and design; b) the analyses of semi-structured interviews and questionnaires conducted with teachers that participated in school-focused or in individually-based inservice activities, their principals and the involved inservice teacher educators and c) the results of in depth case-studies on six schools that participated in school-focused INSET, aiming at comprehensive educational innovations.
This study was supported by a grant from the Institute for Educational Research (SVO) in the Netherlands (grant 5390).

METHODS

The study was conducted in three phases. In phase one a modified Delphi technique was used. A panel of experts in the field of inservice education reviewed a list of 60 features of effective inservice programs with respect to their importance for the implementation of educational changes. Based on the results of the Delphi procedure four different questionnaires and interview schemes were developed for the second phase of the study: a survey. Trainees, inservice teacher educators, school administrators, and school advisers who participated in individually based or school-focused inservice education were either interviewed or filled in a questionnaire about characteristics of their inservice education program. In the third phase of the study six schools were selected on the results of the interview and questionnaire studies. All schools participated in an inservice program that was judged as favourable in terms of effective inservice program characteristics. Qualitative data were collected on the effects of the inservice program and the way the schools handled the innovation process that was initiated by the inservice education.

The Delphi-procedure.

After reviewing studies on inservice teacher education and educational implementation, a list of statements or descriptions of effective characteristics of inservice activities was compiled. A panel of 36 experts was formed whose task it was to review these features of effective inservice programs with respect to their importance for the implementation of educational changes. For this purpose a modified Delphi technique was used.
For the purpose of this research the 36 experts who participated, represented the following branches: research (4), school advisory services (7), inservice teacher education (7), central government (4), governmental advisory boards (2), school inspectorate (3), primary school teachers (5) and teachers' unions (4).

The questionnaire with 60 statements was presented to the participants in three rounds. In each round the participants were asked to judge the appropriateness of each statement (to agree or disagree), to reformulate or reword the statement if necessary, and to judge the importance of the statement for giving effective inservice education by using a five-point rating scale. In the second round each participant judged each statement again-reformulated or not- by using data derived from the appropriate assessments and the arguments put forward by the participant in the first round and by the group of participants as a whole. A statement was reformulated in the second round if two or more participants suggested a rewording. The same procedure for reformulating a statement was used for the third round. Again the participants received data and arguments from the second round. In the third round the participants were asked not to reformulate the statements again, but only to give their final opinion on the appropriateness of the statement.

Data gathering and analyses.
In 1985 and 1986, the list with statements, revised after every round, was presented to the Delphi participants three times. Information concerning the objectives of the study and the different types of inservice education was included in the questionnaire , to give all the participants the same framework of reference for judging the statements. All participants returned the questionnaire (response 100%).
During each round the statements were analysed according to the importance the participants attached to the statements, the appropriate assessments of the statements and the proposed rewording. Frequency distributions were made of all statements. Differences between groups of participants were tested by means of a variance analysis. For each round the reliability of the list of statements was calculated by coefficient alpha.

The Survey.
The Delphi-study helped us to know what to ask in the survey-phase of the study on characteristics and effects of inservice teacher education. On the basis of the findings of the Delphi-procedure and some preliminary interviews the instruments were developed.
For participants of school-focused inservice activities was decided to use a structured interview to gather school-specific information on both program characteristics and the way in which the inservice activities were embedded in the school practice.
In order to gather information from the large number of participants of individually based inservice programs it was decided to send questionnaires by post.
The contents of the interview scheme and the questionnaire were largely identical. They contained seven major subjects: personal characteristics, characteristics of the design and execution of the inservice education program, results of the implementation of the inservice activities in school practice, attitudes towards educational innovations, sense of efficacy of the respondent, and characteristics of school organization and school climate.

Data gathering and analyses.
This part of the study was carried out in the central and southern parts of the Netherlands from May 1986 to September 1987. After the feasibility of the appoach was established, permission was obtained from all teacher training colleges to write to the inservice teacher educators and the primary school

teachers asking for their cooperation in obtaining the required information.
The sample of participants of individually based inservice education consisted of 494 teachers (response 39%) and 232 school leaders (response 53%). Data on teachers' perceptions of school-focused inservice activities were obtained through interviews administered to a sample of 156 school teams (response 70%) and their principals. Information on the design, features of inservice activities, and implementation of educational change were also obtained through interviews administered to 104 inservice teacher educators (response 43%), and to 16 school advisers. Teachers in this sample represent 112 different inservice programs conducted by 20 teacher training colleges.
Descriptive statistics were computed for each variable, composed variables were computed to measure the presence of the characteristics of effective inservice education activities as assessed by the Delphi-panel and statistical analyses were performed to identify relationships between inservice features and effects on school-practice.

The Case Study.

The case-study was an integrated multiple case analyses, using techniques of informal and structured interviewing, incidental non-participant interviewing and document review. The data were collected and analysed by using the methodology as proposed by Miles and Huberman (1984). Starting point in this method is that qualitative research has to be verifiable.
The purpose of the case-study was to complement the standarized, extensive, snap-shot nature of the survey data to depict the processes and outcomes of change efforts through inservice education. It also had to indicate what factors contributed to the realization of educational changes.
The accent in data collection and analysis was laid on the structure and functioning of the school system as a whole, the goals of the innovation process the school was in, the objects of the inservice activities, the contents of these activities, the way the inservice education program fitted into the school and the effects of the program on daily school practice.
Six schools were selected for this in-depth case-study. All schools participated in a school-focused inservice program that was judged as favourable in terms of effective inservice program characteristics. Four schools indicated that they had successfully implemented the content of the inservice activities, and two schools indicated that they had not successfully put into practice the newly acquired skills and insights.
The sites ranged widely on location, setting, type of innovation, length of inservice activities and on the way they dealt with the implementation of educational changes.

Data gathering and analysis.
From February to June 1988 each of the sites was visited several times. Three semi-structured interviews were conducted with the principal, and one with most of the teachers, the inservice teacher educators and with the school advisers. Relevant documents of the inservice program, of school staff meetings and of developmental plans of the schools were analysed. Incidentally observations were made in classrooms to watch new teaching-approaches, methods and materials being put into practice.
During and after data collection the proces of data reduction and display in matrices took place. Site-summaries were written for each school with interpretations of what had happened. The cross-site analysis used cross-site matrices to draw and verify conclusions.

RESULTS

The Delphi-procedure.

At the end of the first round the number of statements listed in the questionnaire was reduced from 60 to 34. The selection of the remaining statements was based on the following criteria: (1) the scores based on appropriate assessments (only those statements with a score of 4.0 or more were selected); (2) the scores based on the importance judgments (only those statements in which 80% of the participants agreed were retained); overlap (of those statements which were similar in intention, only the higher valued ones were selected).
Regarding the second of these criteria, three statements with a score just below 80% were retained because of their emphasised importance in literature on inservice education. All statements are listed in Appendix 1. On average, each statement received comments from 19 participants. Only those statements for which two or more participants suggested a similar change were reworded.
In the second and third round considerable similarities were to be found concerning the importance of the design characteristics of inservice activities. The mean scores concerning the importance of the statements and the percentages of assessment-scores on the appropriateness of the statements were mostly higher in the second round than in the first one. For most statements the standard deviations were smaller. In the third round the results were generally the same as in the second round. Coefficient alpha varied from .95 (first round), .83 (second round) to .87 (third round).
This procedure resulted in a list of statements on features of effective inservice education, as perceived by experts in the field of inservice education in the Netherlands. Almost all the statements finally had an asessment-score larger than 90% and a mean appropriate-score higher than 4.2 (on a 1-5 scale: very unimportant - very important) (see also Van Tulder, Veenman & Sieben, 1988).
It must be noted that the Delphi-procedure in this research did not form a goal in itself. It was merely a means for attaining a justifiable wording for a questionnaire to be used in the survey.

The Survey.

The survey poses the question: to what extent do designers of the inservice education activities, conducted in the years 1984-1987, take the characteristics of effective inservice education into account?
The presence of the characteristics defined in the Delphi-statements were computed with the variables that give information about those characteristics. The data are derived from both inservice teacher educators, principals and primary school teachers. Criteria, that from now on will be called 'Delphi-norms', indicating the presence or absence of a characteristic, were established for every set of variables of which a statement was composed. (For a more elaborated description of this procedure see Van Tulder, Veenman & Roelofs, 1988).
The results of the survey are presented here in the perspective of the statements on effective inservice education as assessed by the Delphi-panel (see appendix 1).

The planning and preparation of inservice education. (See figure 1).
In the planning and preparation of inservice education activities the colleges

of education for primary teachers (PABOs) and the school advisory services (SADs) should in mutual coordination agree on inservice education programs being offered to schools. This should ensure programs that meet the needs of schools (statement 1). Most of the inservice teacher educators state that the inservice education program is offered to schools in coordination with the SAD. Slightly more than half of the inservice teacher educators believe that this planning process is guided by the developmental plans of schools (statement 2). In offering inservice activities most PABOs are primarily responsible for delivering the content and substance of the program. According to the inservice teacher educators about 70% of the SADs see to the follow-up assistance in the actual implementation of the newly acquired practices (statement 3). There should not only be coordination between PABOs and SADs. Also mutual consultation between these institutes and the schools about the planning of objectives, content and methods of inservice programs, and the implementation of new practices in schools is important (statement 4). Participants of inservice education programs mostly hold the view that they have little or no influence on the planning and preparation of their inservice activities.

According to the Delphi-panel inservice education is most effective when the staff of a participating school determines which inservice activities are needed to bring about school improvement and which members of the staff should participate in the program (statement 5). This means that a school should have a developmental plan and that they should take this plan into account when deciding on the kind of inservice education that is needed. Most schools neither explicitly plan the needed inservice activities in their developmental plans, nor implicate the developments of school-improvement in their decision as to who will participate in a program. In individually based inservice activities teachers mostly enroll on their own initiative (86%). In school-focused inservice education the school staff (49%) or the principal (11%) takes the initiative.

The Delphi-panel agreed that inservice education programs should not only respond to specific and identified school needs, but should also be based on the expertise of the PABOs and SADs to implement educational innovations (statement 6). Although the survey does not give explicit data about this statement, the overall impression is positive. About 80% of the participants reported that the inservice teacher educator has a thorough knowledge of the subject.

Design and execution of inservice education. (See figure 2).

Not only planning and preparation, but also designing and delivery of school-focused inservice programs, including the follow-up support, should be the result of a collaborative effort between PABOs and SADs (statement 7). This collaboration is effectuated in only 30% of the school-focused programs. The way in which school advisers are involved in the design and execution of the program is very diverse. Some of them only discuss the subjects of the program once in a while with the inservice teacher educator. Others are intensively engaged and join in every aspect of the inservice program. The follow-up support is, in most cases, considered to be the task of the school adviser. Although the inservice teacher educators prefer to continue their active involvement after the execution of the program, time and finances are mostly lacking.

The inservice education must result in concrete and visible changes in daily school and classroom practice (statement 8). In the next paragraph the effects of the inservice activities are looked at more closely.

Before a program starts the school staff should be consulted. Trainer and trainees can become aquainted with each other and come to agreement on the objectives and design of the program (statement 10). Such an intake can be a very important means of success for the program. Almost 60% of the school-focused programs and over 40% of the individually based pograms are preceeded by an intake-procedure. Over 70% of the inservice teacher educators of school-focused programs indicated that they knew enough of the ins and outs of the school situation of the participants and of their needs and wishes. About 50% of the participants stated that they were satisfactorily informed about the design of the program.

Inservice education must meet the identified needs and practical problems of teachers and the way teachers function in the school-as-organization (statement 11). The program should have practical relevance, should be usable and should take into account the practical problems of the teacher in his or her classroom practice. According to the participants, 65% of the individually based programs and 50% of the school-focused programs meet the needs and wishes of the trainees, and are practical and useful.

The trainee, whether involving an individual or the whole staff, should have a clear picture of what he or she wants to gain from the program (statement 12). This requirement is hardly fulfilled. Less than 25% of the trainees has a clear picture of the objectives before participating in inservice activities. The schools as well as the teachers and the inservice teacher educators should pay more attention to this matter.Inservice education activities require a work schedule in which the inservice teacher educator justifies the chosen objectives, contents, methods and expected effects (statement 14). Over 75% of the inservice teacher educators make such a schedule. All the aspects mentioned are described by most of the inservice teacher educators, except for the expected effects. It seems that the inservice teacher educators find this difficult. It is possible that the expected effects are incorporated in the definition of the objectives of the program. It might, however, be more clear to the trainees if it is explicitly stated what they can achieve by participating in the program.

To reach concrete and visible changes, inservice education, especially school-focused inservice, should preferably focus on objectives directed at skill improvement or acquirement. Objectives regarding knowledge, insight and attitude, should not be neglected but should relate to the skills to be acquired (statement 9). In 75% of the school-focused programs more time was appointed for practical activities than for transfer of information. This indicates that most of the programs indeed focus on the acquirement of skills. Situations in which concrete and practical activities are emphasized are most likely to be effective (statement 17). Respectively 70% and 90% of school-focused and individually based inservice education programs contain practical training. Most favourable are, according to the Delphi-panel, programs that incorporate the following components of training: presentation of theory or description of skills, modelling or demonstration of skills, practice in simulated and classroom settings, structured and open-ended feedback (provision of information about performance), and coaching for application (hands-on support, in-classroom assistance) (statement 16). About 80% of the programs contain minimally three of the required components. There are hardly any programs that contain all six components. Coaching is seldom carried out. Another important aspect of inservice education programs directed at acquiring or improving skills is the use of peer-observation and feedback strategies. This leads to better chances of implementing the desired changes (statement 15). In less than 10% of the programs this method of learning is applied.

Inservice education is a form of adult learning (statement 13). The inservice teacher educator has to teach adults who often have a lot of experience. This asks for a didactic approach that takes this fact into account. Trainees of individually based inservice education are overall more satisfied with the approach of their inservice teacher educator than trainees of school-focused inservice education.
The number of participants per training group should be dependent on the objective and form of the program (statement 18). This number is now fixed at 20 by the government. There are only limited possibilities for realizing an ideal amount of participants in case this number is less than 20. The mean number of participants in individually based inservice groups is 18 (SD=4.3), in school-focused inservice groups the mean number is 21 (SD=7.8). However, most inservice teacher educators and trainees are satisfied with the size of their training group. This shows that the number of participants has not been obstructive.
Inservice education activities should include a form of formative or process evaluation: the collection of data concerning the way in which the course was conducted and which aspects were experienced as positive or negative (statement 19). Process evaluation, which in some cases has led to an improvement of the program has been applied in almost all programs. Another form of evaluation, the product or effect evaluation, should also be incorporated: after a certain period of time a check should be made to see to what degree the content of the program has been applied to school or classroom practice (statement 20). This summative or product/effect-evaluation is used less frequently (60%). Most of these product/effect-evaluations however are conducted during the last program-meeting. The question is whether the effects of a program can be adequately established at such short notice.

Conditions for implementation (see figure 3).
To increase the probability that the program will be implemented in the school, there should be a number of links between the program and the school. Inservice education programs should be -where possible- school-focused, i.e. directed at the complete staff of a school or at a group functioning within a school (statement 24). A program is defined as 'school-focused' when the complete staff or a substantial part of the staff has participated. Over 90% of the programs that in their design intended to be school-focused, comply with this definition. The effects of a school-focused inservice education program increases when the principal participates (statement 21). That principal participation is vital seems to be clear to the schools. In 90% of the investigated schools, principals join their staffs in inservice education.
In individually based inservice education, implementation of the intended change in school or classroom practice is more successful when more than one teacher from the same school participates in the program (statement 27). This is the case in over 50% of the individually based programs. According to the Delphi-panel, participants of inservice education programs should know they have the support of the school board (statement 22). Especially in school-focused inservice education the participants know that they are supported by the school board (90%). In individually based programs this support is less (60%). Sometimes the members of the school board do not even know about the inservice education which is being followed by their personnel.
As determined before, there should be a long-term developmental plan at school level, describing which inservice activities will be followed and what impact it should have on the school (statement 23). Hardly any schools determine in advance the desired effects of the planned inservice activities.

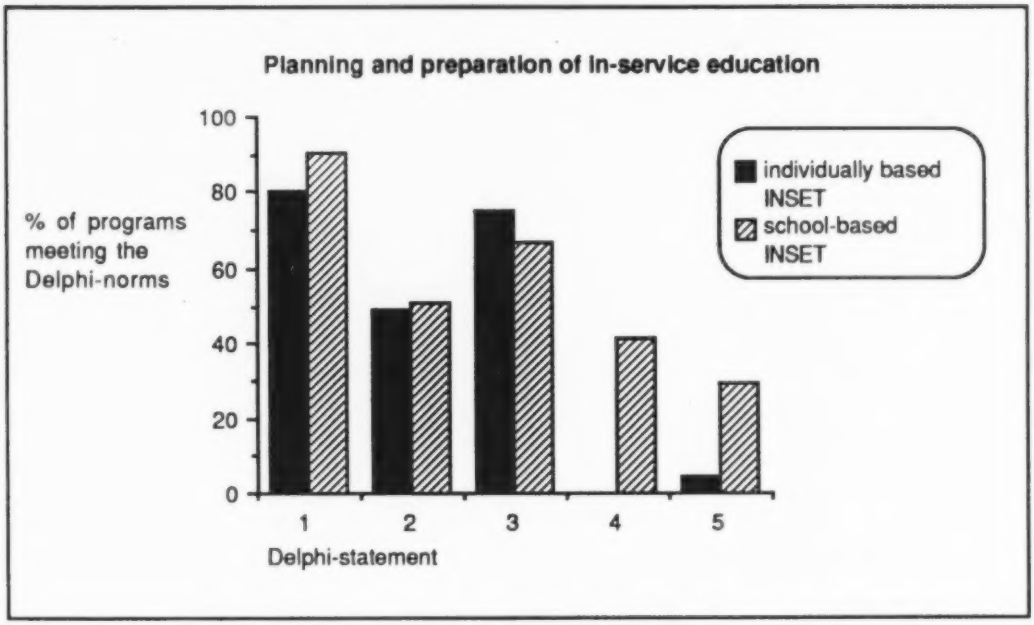

Figure 1: The degree to which inservice education programs meet the Delphi-norms of the statements concerning planning and preparation of inservice education.

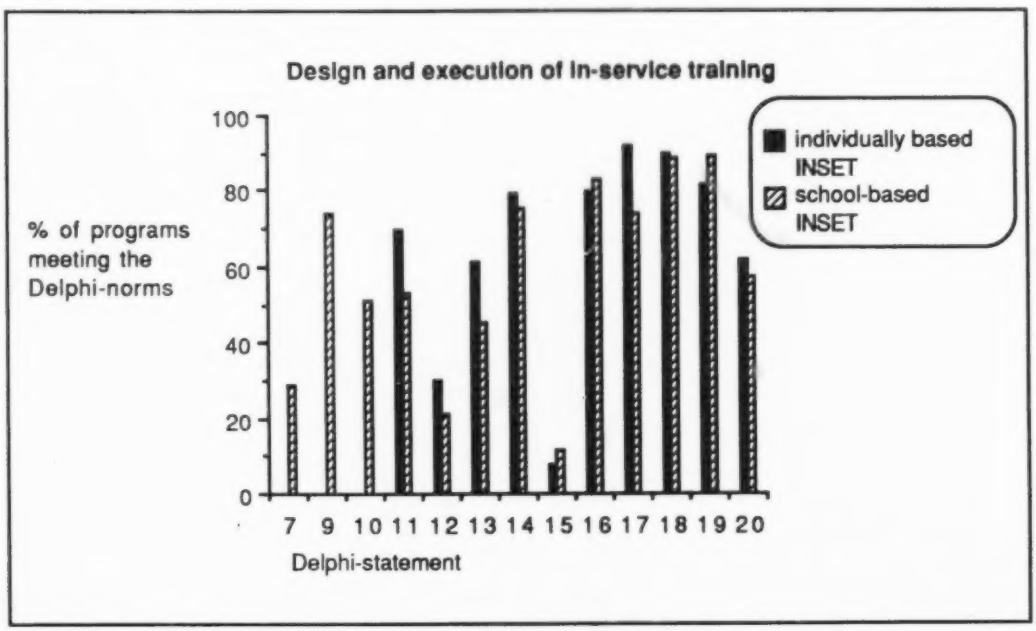

Figure 2: The degree to which inservice education programs meet the Delphi-norms of the statements concerning design and execution of inservice education

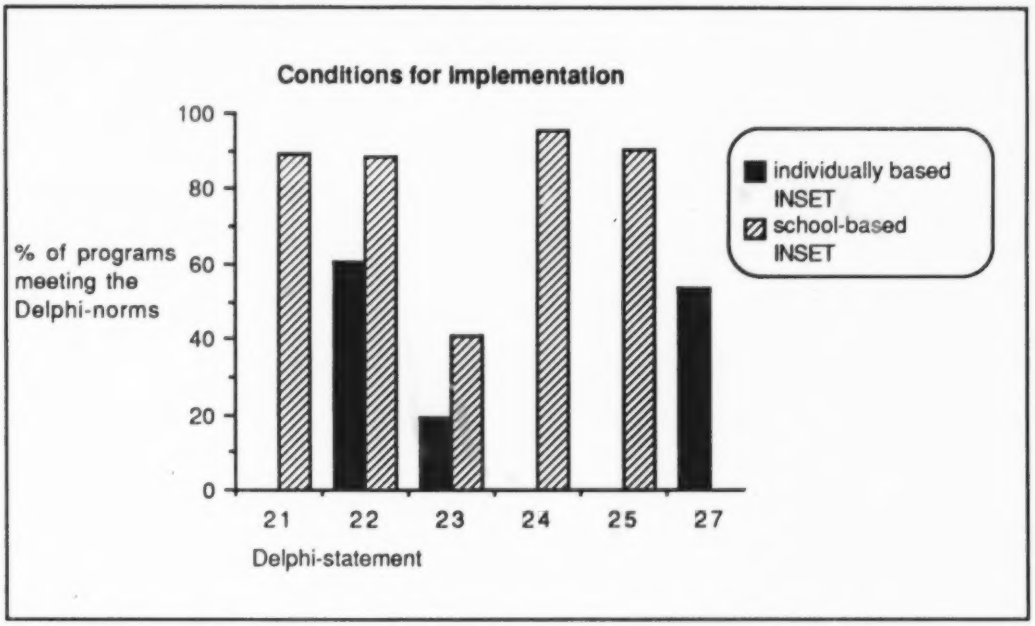

Figure 3: The degree to which inservice education programs meet the Delphi-norms of the statements concerning conditions for implementation.

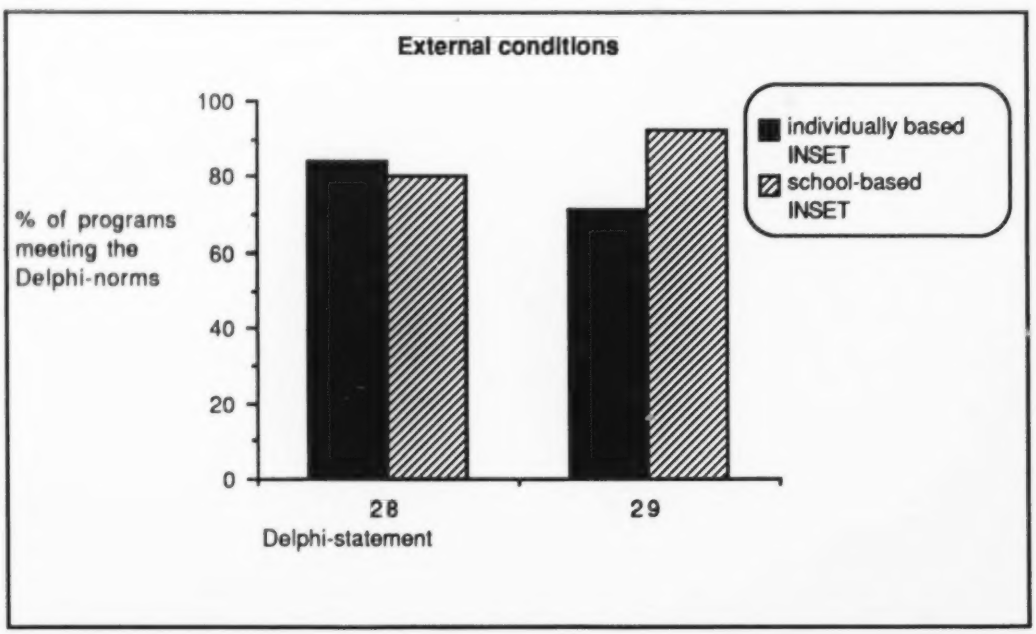

Figure 4: The degree to which inservice education programs meet the Delphi-norms of the statements concerning external conditions.

However, almost 40% of the schools that participate in school-focused programs and 20% of the participants in individually based programs state that intended innovations, described in their developmental plans, were considered before they enrolled in the program. School-focused inservice education, in which the use of 'hands-on' materials and activities is central, improves the implementation of an innovation (statement 25). Over 90% of the participants of school-focused programs held the view that the inservice education was method-related. The materials which were used during the program were usable in their daily practice.

External conditions (see figure 4).
Convenient conditions, such as times and locations are important for the success of an inservice education program (statement 28) and inservice education activities should be conducted primarily during participants' normal working hours (statement 29). Most participants are satisfied with both time and location of the activities. Especially school-focused inservice education normally takes place before six p.m. Individually based inservice activities are more often conducted in the evening hours.
In designing and delivering school-focused inservice education the government should facilitate PABOs and SADs for mutual consultation, preliminary visits to the school for needs identification, hands-on support of participants (if needed) and evaluation (statement 30). The facilities the government allocates for inservice teacher education are, according to all respondents involved, insufficient. Only PABOs get facilities for the supply of inservice teacher education. These facilities are minimal: they hardly cover the costs of the actual training hours. The extra investment time for consultation, needs assessment, support and evaluation are not reimbursed.

Inservice teacher educator (see figure 5).
For successful inservice education a concrete, specific pre-training for inservice teacher educators is of great importance (statement 31). Inservice teacher educators generally teach students in their pre-service education. Inservice education asks for extra knowledge and skills and a different attitude. Specific pre-training could be a solution to this problem. About 50% of the inservice teacher educators have had pre-training. Most attention is given to the contents of the subject matter. In only 50% of the pre-training the inservice teacher educators got more information and skills on adult learning theory and learning styles. According to the Delphi-panel attention should be given not only to new subject matter knowledge, but also to the didactics of inservice training (statement 32).
Finally, the inservice teacher educator is expected to demonstrate enough understanding of the work situation in which the knowledge is to be used to be viewed as credible (statement 33). Over 50% of the participants of inservice education hold the view that the inservice teacher educators have thorough knowledge and insight in school practice.

Summarizing, one could say that the designers of both school-focused as individually based inservice education take the characteristics of effective inservice teacher education into account, to a reasonable extent. For most of the statements the majority of the respondents expressed the view that the characteristics were sufficiently present.

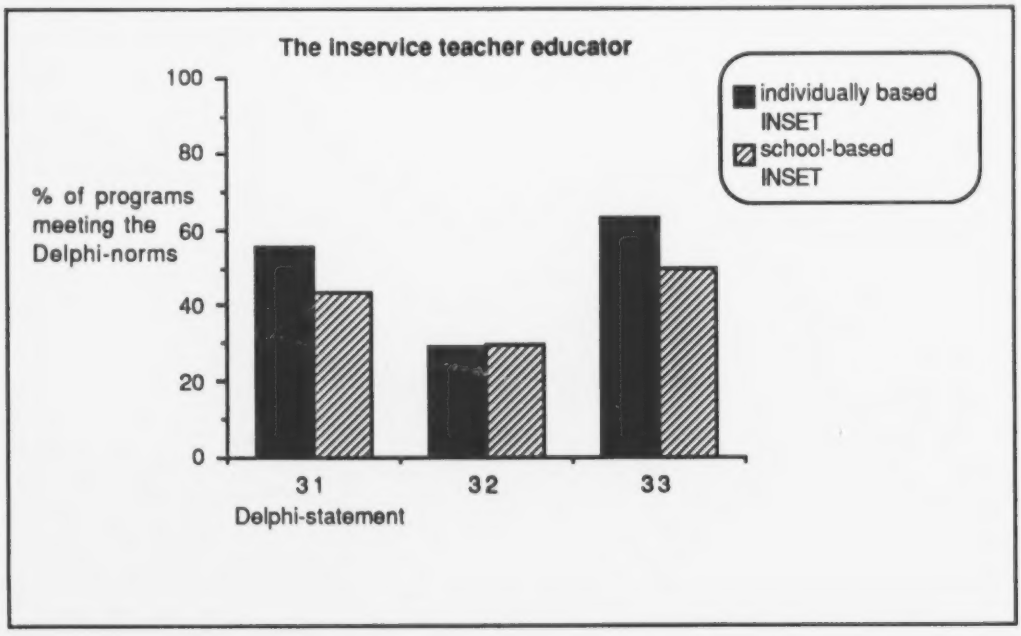

Figure 5: The degree to which inservice education programs meet the Delphi-norms of the statements concerning the inservice teacher educator.

The effects of inservice teacher education.

The overall impression of participants of inservice education and training is positive. When rating the experiences in which they have participated, over 80% of the participants in individually based inservice education find the program recommendable to colleagues. Over 60% of the participants of school-focused inservice education is satisfied and would recommend the program to others.
Although it is difficult to compare the programs because they are very diverse, it is clear from the comments of many respondents, that a substantial effort has to be made to assess the perceived needs of teachers and schools, with respect to the process and substance of the inservice teacher education. One of the most important problems teachers noted is that inservice education suffers from a lack of 'delivery capacity'. It seems that there is a serious problem in relating training to the daily practice of teachers.
It is widely acknowledged that there is a lack of use of 'knowledge', broadly defined to include ideas, information, skills, materials, experience, and the like, acquired through inservice teacher education (Walberg & Genova,1982). The results of this research also indicate that the implementation-rate of innovation as a result of inservice programs is low.
Because the investigated schools following inservice education had very diverse goals, it is difficult to compare the effects of the programs in the different schools. Therefore two measures that are not content-specific, are used to establish the effects: the percentage of realized goals and the rate of utilization of newly acquired knowledge in classroom practice.
Figure 6 shows the frequency distributions of the percentages of realized goals. This variable is construed by dividing the number of realized changes in teaching practice and in school organization by the number of changes in these

areas the inservice education program aimed at.
In both types of inservice education programs the percentage of realized goals is fairly small. About one third of the participants state that none of the goals the program aimed at were realized.
Figure 7 shows the frequency distributions of knowledge use in classroom practice. In two different questions the respondents were asked how often they put the knowledge they acquired through the inservice education program, into practice.
It appears that, similar to the percentages of realized goals, the frequency of using the acquired knowledge is limited.

After establishing the effects of inservice education programs the relation between the characteristics of effective inservice education and the efficacy of inservice education programs in terms of realized goals and knowledge use is determined with the Pearson product-momentcorrelations. Table 1 shows the correlations between the various characteristics of effective inservice education, established by the Delphi-panel and the effects of the investigated programs.
In the **planning and preparation** of school-focused inservice education programs there is a significant positive correlation of Delphi-statements 1, 3 and 4 with efficacy of the programs.
This indicates that a better coordination between PABOs and SADs, which results in a program that meets the needs of schools, creates a better chance of being effective in daily school practice. In individually based inservice education there appears to be hardly any correlation between planning and preparation characteristics and effects. In the **design and execution** of inservice education programs the Delphi-statements 11, 13 and 16 have a significant correlation with effects from both school-focused and individually based inservice education. Two kinds of programs especially have a large impact on knowledge use and realization of goals: programs that meet the needs and practical problems of teachers and the way they function in the school as an organization, and programs that utilize knowledge of adult learning theory. Effects are larger when the identified components of effective training are applied. There appears to be some positive correlation in school-focused inservice education between the clearness of goals to be reached (statement 12) and the percentage of realized goals. When strategies of peer-teaching and feedback are utilized (statement 15) there is a higher percentage of realized goals.
In individually based inservice education programs with a work-schedule, in which the inservice teacher educator justifies the chosen objects, contents and methods (statement 14) are attended by a higher percentage of realized goals. Only statement 22 on **conditions for implementation**, which demands the support of the school-board, shows a significant correlation with efficacy in individually based inservice education.
From the statements concerning **external conditions**, statement 28 - stating that convenient conditions, such as times and locations are important for the success of the program - correlates significantly with the realized goals in school-focused inservice education.
Statement 33 on **the inservice teacher educator** shows strong positive correlation with the efficacy of inservice education programs. Accordingly as the inservice teacher educator demonstrates more understanding of the work situation, the participants in the program reach a higher efficacy.
It seems obvious that one of the most important features of effective inservice education programs is the connection between the content and process

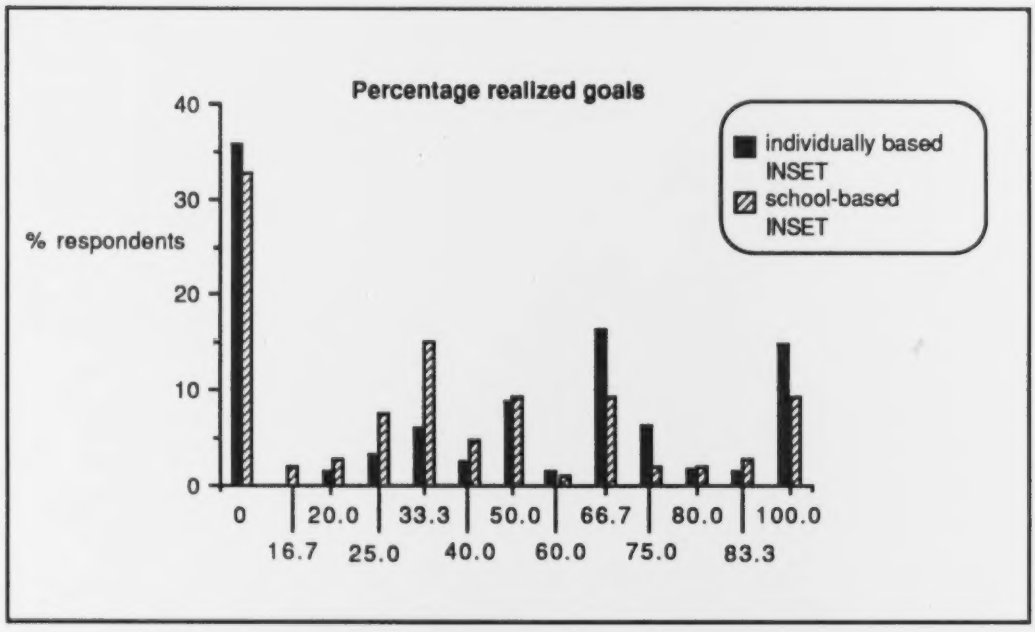

Figure 6: Frequency distributions of the percentage realized goals in school-focused and individually based inservice education programs.

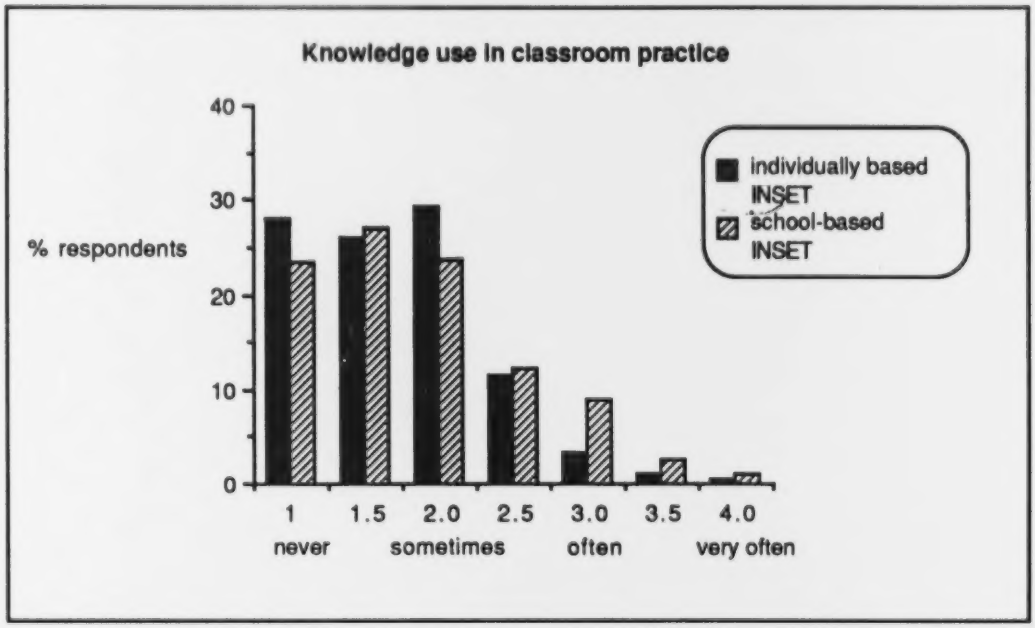

Figure 7: Frequency distributions of the knowledge use in classroom practice in school-focused and individually based inservice education programs.

of the activities and the concrete classroom practice of the participants. The training has to be closely related to the needs of the teachers.

By means of a cluster analysis on the scores the Delphi statements of every single school-focused inservice education program (present or absent) it is established whether a program in general meets the Delphi-norms. This results in two clusters. One cluster contains the programs that to a relatively high degree meet the Delphi-norms (N=52). The other cluster contains the programs that to a relatively small degree meet the Delphi-norms (N=104).
After reviewing the 52 programs that score highly on the Delphi-norms, there appear to be large differences in efficacy. About 50% of the schools that participated in these programs indicated a positive impact on all aspects of the contents and arrangements of their teaching practice and of the structure and organization of the school that they aimed to change. Little positive impact is reported by 27% of the schools. No impact is reported by 23% of the schools. (For a more elaborate description of this procedure, see Van Tulder, Veenman & Roelofs, 1988.)
By means of an in-depth case-study it was attempted to find out what configuration of factors have contributed to the realization of educational changes.

The Case-study.

When taking a closer look at the six case-study sites, it becomes clear that the efficacy of the inservice education programs could be differentiated further than was done in the survey analyses. Some schools had innovation goals similar to the goals of the inservice education program. Other schools desired to implement innovations that were more comprehensive and interfered much more in school life. The degree of effect is established at school and classroom level. Different aspects were taken into account. At school level these were integration of working methods between staff members, school climate, views on education and special education provision, and at classroom level the use of materials, organization, pedagogic-didactic approach and individualization.
Two schools attained high effects. Both schools started a comprehensive innovation process and realized many changes, with the help of the inservice program at both school and classroom level. A moderate effect was found at two schools. One of the schools took the first step towards more individualized education by changing the aspects of classroom organization, the use of materials and the teaching approach. At the other moderate effect school a new language program was implemented in a part of the school. The last two schools can be defined as low effect schools. The inservice education program had hardly any influence on the existing way of working.
The results of the case-study are summarized in the perspective of this tripartition.
The local **schoolcontexts** did not seem to have a great influence on the effects of inservice education. But the percentages of pupils from the lower social economic classes appeared to be the highest in schools with low effects. Neither the size of the school, the average age or gender of the teachers nor the history of innovation or the experiences of individual teachers with former inservice activities seem to make any difference.
The **adoption process**, that led to the decision to participate in the inservice education program, showed some remarkable differences.

Table 1: Correlations between the degree inservice education programs meet the characteristics of effective inservice education and the efficacy of the programs.

Delphi-statement	Knowledge use				Percentage realized goals			
A	SF	N	IB	N	SF	N	IB	N
01	.20*	(105)	-.09	(311)	.21*	(105)	.08	(252)
02	.09	(105)	.05	(302)	.14	(105)	-.02	(252)
03	.16	(105)	.10	(311)	.21*	(105)	.10	(252)
04	.21*	(149)	-		.11	(143)	-	
05	.05	(131)	-.11*	(475)	.04	(128)	-.16**	(409)
B								
07	.08	(79)	-		.10	(74)	-	
09	.09	(146)	-		.08	(140)	-	
10	.17*	(149)	-		.17	(143)	-	
11	.42**	(149)	.26**	(475)	.54**	(143)	.36**	(410)
12	.16*	(148)	.11*	(471)	.24**	(141)	.16**	(406)
13	.43**	(149)	.30**	(475)	.40**	(143)	.35**	(410)
14	.02	(75)	.05	(253)	-.07	(73)	.22**	(193)
15	.11	(149)	.19**	(473)	.24	(143)	.12*	(407)
16	.25*	(117)	.12*	(392)	.32	(112)	.13*	(330)
17	.06	(120)	-.06	(416)	.19	(125)	.03	(353)
18	.13	(149)	-.01	(472)	.08	(142)	.04	(408)
19	.12	(149)	-.12**	(469)	.17*	(143)	.10*	(407)
20	-.08	(77)	.15*	(281)	-.15	(75)	.13*	(222)
C								
21	-.08	(77)	-		-.19	(102)	-	
22	-.25*	(45)	.18**	(331)	-.04	(42)	.28**	(265)
23	-.02	(108)	-.09	(461)	-.11	(105)	.09*	(396)
24	.07	(148)	-		.07	(142)	-	
25	.04	(149)	-		.01	(143)	-	
27	-		-.02	(337)	-		.06	(273)
D								
28	-.09	(147)	.02	(339)	-.21*	(141)	.00	(273)
29	-.03	(149)	-.02	(467)	-.01	(143)	-.00	(402)
E								
31	-.03	(104)	.02	(331)	.12	(104)	.17**	(252)
32	-.08	(88)	.04	(279)	.02	(86)	.00	(219)
33	.37**	(149)	.23**	(472)	.48**	(143)	.36**	(407)

NB.: * $p < .05$; ** $p < .005$

A = planning and preparation
B = design and execution
C = conditions for implementation
D = external conditions
E = the inservice teacher educator

SF = school-focused INSET
IB = individually based INSET
N = number of respondents

The schools had different motives for participating in the inservice education program. The high effect schools expected the program to contribute to current developments of educational innovation. The moderate effect schools mainly aimed at acquiring new knowledge and skills while the low effect schools participated in order to obtain federal funding that accompanied the inservice program.

At all sites the whole staff was involved when the decision was made to adopt the program. At the low effect schools this involvement was just marginal. At the moderate and high effect schools the adoption process was more intensive and the procedure and progress were clear.

Pre-planning of the actual implementation of newly acquired knowledge and skills was done at school level at the high effect sites. At one of the moderate effect sites it was agreed that the teachers were free to decide whether or not to use new knowledge and skills at classroom level. There was no planning for knowledge use at the other sites.

Some **program characteristics** seem to have contributed to the effects on educational changes .

The high effect schools participated in an extensive program, lasting two years. The teachers acquired new knowledge, skills and attitudes. One of the school developed a lot of materials that were tried out, revised and implemented during the program. The inservice education efforts at the high effect sites contributed strongly to the realization of the planned innovation.

Both moderate effect schools followed a short program. Knowledge, skills and attitudes were affected more or less but hands-on materials were not available. The program contributed moderately to the realization of the innovation goals.

One of the low effect schools gained new knowledge and skills from the program. However, the inservice education did not really seem appropriate for implementing the desired educational changes.

Looking at the **organizational aspects** it can be noted that the sites with high and moderate effects created structural arrangements to cope with problems of planning, coordination and implementation through organized, concrete and joint innovation activities. In sharp contrast, the low effect sites did not pay any attention to the creation of these kind of structural arrangements.

At the sites without any structural arrangements for implementation no explicit agreements were reached to try out aspects of the innovation. There was no control for or support in using the innovation. The organizational impact of the program was low to nil. The schools with high effects especially have created an extensive network of arrangements for planning, coordination and implementation of the innovation.

During implementation some differences in the functioning of the structural arrangements for implementation were obvious. At the high effect schools the staff was committed to implement the desired changes. A plan for implementation was agreed and there was control for commitment. At the moderate effect and low effect schools there was less commitment for implementation. No agreements to use the new knowledge were made, every teacher could decide whether or not to implement the changes.

The structural arrangements for implementation were closely linked to classroom practice at the high effect sites and at one of the moderate effect sites. Within these arrangements aspects of the desired change in the classroom were prepared, tried out and evaluated. This link to classroom practice was moderate to weak at the other sites.

There appeared to be some notable differences in the way the principals influenced the innovation processes in their schools. Four steering functions which are critical for innovation success were considered: direction or concept

clarification, directional pressure, latitude definition and assistance/support (Van der Vegt & Knip, 1987).
The most successful schools have principals who give a lot of direction, directional pressure and support and not too much latitude. They steer their staff to the intended innovation goals. At the schools with high effects and at one moderate effect school, the role of the principals can be defined as 'instructional leaders' (Duke, 1987). At the other moderate effect school, where the principal did not take an active part in steering the implementation process, the assistant principal did.
There are some clear differences in the functioning of the school staff during implementation. At the high effect schools there were more content-specific collegial contacts, more collaboration and more collegial support. The climate at school is experienced as being more positive than at the moderate and low effect schools.

Some of the most salient findings of the case-study were reported here. It is obvious that in the context of this article, the data could not be reported to their full extent.

DISCUSSION.

Using the Delphi procedure has helped in obtaining the most reliable consensus of opinion of a group of experts about important characteristics of effective inservice education for teachers by a series of intensive questionnaires interspersed with controlled opinion feedback. Both the appropriate assessments and the importance judgements have converged gradually during the procedure. However, one must be cautious when interpreting this data, because of the small number of respondents representing each group.
From the survey one could say that the designers of both school-focused and individually based inservice education activities have taken the characteristics of effective inservice education into account to a reasonable extent. According to the majority of the respondents the characteristics were sufficiently present in the programs.
Effects of inservice education are difficult to establish. In this research the contribution of the inservice education to educational innovation is estimated by the users themselves. This implicates different points of view, which results in quite normative estimations that should be interpreted carefully. With this restriction in mind, and the fact that the effects of inservice education activities are overall not very impressive, one can conclude that a number of characteristics of inservice education have a positive correlation with knowledge use and the realization of goals. Coordination between PABOs and SADs in planning and preparation of the program that meets the needs of schools and the practical problems of teachers, contribute to a larger efficacy in everyday classroom practice. Convenient conditions, use of knowledge of adult learning and of the identified components of effective training are important. The inservice teacher educator has to demonstrate understanding of the work situation. It seems obvious that one of the most important features of effective inservice education is the connection between the content and the process of the activities and the practice of the participants.
In the case study it became clear that inservice education, to be useful, should be an instrument in a comprehensive innovation effort. During the adoption process it should be clear to everyone involved, what changes are desired and what the program can contribute to attain it. This can be done through a careful intake-procedure. Adequate structural arrangements for

implementation seem to be important and the role of the principal is crucial. 'Instructional leadership' has important influence on effective implementation. Content-specific collaboration and peer-support can benefit a change effort.
In comprehensive innovation efforts, where inservice education activities have to be an instrument for change, the inservice education should not only be school-focused but also school-specific.

APPENDIX: List of selected statements on inservice education.

A. Planning and preparation.

1. Teacher training colleges for elementary schools (PABOs) and School Advisory Services (SADs) should in mutual coordination agree on inservice education programs to be offered to schools, in order to ensure programs that meet the needs of schools in their districts.
2. In the identification of areas of need for inservice education programs, PABOs should allow themselves to be guided by the developmental plans of schools.
3. The efforts of the PABOs and SADs in offering inservice activities should be coordinated. PABOs are primarily responsible for delivering the content and substance of the program, and SADs for their follow-up assistance in the actual implementation of the newly acquired practices.
4. PABOs, SADs and schools should consult each other in planning objectives, content, and methods of school-focused inservice education and about the implementation of new practices in schools.
5. Based on a larger scheme to bring about school improvement, the staff should determine which members will participate in a particular inservice education program.
6. Inservice education should not only respond to specific and identified school needs, but should also be based on the expertise of the PABOs and SADs to implement educational innovations.

B. Design and execution

7. Designing and delivering school-focused inservice programs, including follow-up support, must be the result of a collaborative effort between PABOs and SADs.
8. Inservice education must result finally in concrete and visible changes in daily school and classroom practice.
9. School-focused inservice education should focus preferably on objectives directed at skill improvement. Objectives concerning knowledge, insight and attitudes should not be neglected, but should relate to the skills to be acquired.
10. In school-focused inservice education the school staff should be consulted before the project begins. Trainer and trainees can become acquainted with each other and come to agreement on objectives and design.
11. Inservice education must meet the identified needs and practical problems of teachers and the way in which teachers function in the school as an organization.
12. The trainee, whether an individual teacher or whole staff, must have a clear view of his objectives before participating in inservice activities.
13. Inservice education is a form of adult learning. Inservice education must utilize knowledge of adult learning theory.
14. Inservice activities require a work schedule in which the inservice teacher educator justifies the chosen objectives, contents, methods and the expected effects.
15. In inservice education programs directed at acquiring or improving skills, the use of peer-observation and feedback strategies leads to better chances of implementing the desired changes.
16. Inservice activities aimed at acquiring or improving skills, should

incorporate the following components of training: presentation of theory of description of skills, modelling or demonstration of skills, practice in simulated and classroom settings, structured and open-ended feedback (provision of information about performance), coaching for application (hands-on support, in-classroom assistance).

17. Inservice programs aimed at acquiring or improving skills are most likely to be successful in the form of workshops emphasizing concrete and practical activities.
18. The number of participants per training group, now fixed at an average of 20, should be dependent on the objective and form of the program.

C. Evaluation

19. Inservice education activities should include a form of formative or process evaluation: the collection of data concerning the way in which the program was conducted and which aspects were experienced as positive or negative. This can lead to an improvement of the program (see also number 20).
20. Inservice education activities should incorporate a form of product or effect-evaluation: after a certain period a check should be made to see to what degree the content of the program has been applied to school or classroom practice (summative or product/effect-evaluation).

D. Conditions for implementation

21. Principal participation in school-focused inservice education is vital.
22. Participants of inservice education should know they have the support of the school board.
23. At school level there should be a long-term developmental plan describing which inservice activities will be followed and its impact on the school.
24. Inservice education programs should be -where possible- school-focused (directed at the complete staff of a school or at a group functioning within a school).
25. School-focused inservice education in which the use of 'hands-on' materials and activities is central, improves the implementation of an innovation.
26. Clearly structured programs, that emphasize the relation between theory and practice, are more successful in implementing the intended changes in school or classroom practice.
27. In individual-based inservice education, implementation of the intended change in school or classroom practice is more successful when more than one teacher from the same school participates in the program.

E. External conditions

28. Convenient conditions, such as times and locations, are important for the success of an inservice education program.
29. Inservice education activities should be conducted primarily during participants' normal working hours.
30. In designing and delivering school-focused inservice education the government should facilitate PABOs and SADs for mutual consultation, preliminary visits to the school for needs identification, and hands-on support of participants (if needed) and evaluation activities.

F. The inservice teacher educator

31. For successful inservice education a concrete, specific pre-training for inservice teacher educators is of great importance.
32. In the pre-training of inservice teacher education attention should be given not only to new subject matter knowledge but also to the didactics of inservice training (e.g. adult learning theory, learning styles of adults).
33. The inservice teacher educator is expected to demonstrate enough understanding of the work-situation in which the knowledge is to be used to be viewed as credible.
34. Inservice teacher educators should be models of effective teaching.

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